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FINANCIAL FORMULAS FOR LIBRARY NETWORKS

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ABSTRACT

Formulas for the fiscal support of library networks are discussed against the perspective of present patterns of library funding. Provisions for financing current cooperative library programs are illustrative of the problems which might be encountered in networks. Several proposals for network development have been concerned with and provide some enunciation of formula components. The future formulas for network support must be based on revenue-sharing principles established by the national political-social climate, which will call for a tested efficiency of design and cost.

LIBRARY SERVICES: A BACKGROUND OF SUPPORT PROBLEMS

The hard core of the financial problem of network development differs only in degree from the present fiscal concerns of libraries.

Libraries and existing networks already are preoccupied with the ever-growing demands of identifiable users, and are increasingly aware of the dimensions of needed service to non-users, however this group may be described and categorized. Financial projections for network support realistically and as nearly accurately as possible must assume that among the advantages of a truly national network will be that of more easily and effectively reaching the former, while participating in any efforts to reach the latter.

Present library users for the most part pay taxes somewhere, or at least find that some portion of their annual tax payments, directly or indirectly, go to library support. This generalization could include the funding of the many contract research and development adjuncts of the federal government. The dilemmas of providing access to library services for all are far from simple in solution. We need not go into any extensive treatment of those non-served, disadvantaged areas: the population-poor rural areas, students, racial minorities, the aged, the disabled, the institutionalized. We are very conscious of the need for great improvement in the support of state library agencies, the lack of tax base for many local communities where demands may outrun ability to pay or to raise tax revenues. The multiplicity of local government taxing units, with cumbersome fiscal practices, is a further barrier to service. In some places, it is impossible (or officials are unwilling) to accept federal or state aid. The public library, relying as it does on local tax sources

to satisfy program demands, faces a struggle for status quo support in many communities as it competes for funds.

Public libraries depend heavily on local government appropriations; in 1965, these sources provided 84% of public library revenues. The remainder, 16%, came from state and federal transfer funds, with added income from endowments, gifts, fines and other miscellany.[1] In 1962, when these percentage figures were substantially identical, these funds totalled $359.3 million from reporting libraries, of which $26.4 million came from state grants, and $301.5 million from local appropriations.[2]

Corporate support of libraries for the benefit of specialty-users, can be charged off in the price structure applied to the end product, and, therefore, ultimately paid for by the consumer. Non-governmental, nonprofit agencies supporting library services for a usually highly defined group frequently can trace their funding to the advantages enjoyed by tax-deductible contributions of the erstwhile taxpayer.

Financing patterns in themselves are complex. Federal contributions are lumped in with state subsidies in percentage figures, so that it is difficult if not impossible to separate local support. Joint costs of services do not provide distinguishable segments within governmental units and institutions.[3] There is, finally, lack of uniform accounting. The end

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1. Drennan, Henry T. "Public Library Program Goals in the Decade of the 1970's," in The Bowker Annual of Library and Book Trade Information, 1969, p.16. New York: Bowker, 1969.
2. Knight, Douglas M. and Nourse, E. Shepley. "The Costs of Library and Informational Services," in their Libraries at Large, p.214. New York: Bowker, 1969.
3. Ibid, p.171.

result: it is most difficult to determine what the precise costs of library/ information services really are.[4]

Access to reliable library statistics containing fiscal information is uncertain and behind the times. The National Advisory Commission on Libraries found it impossible to ascertain the total amount of national library expenditures, nor to estimate the costs required to fully support present library services, much less future ones.[5] Statistical standards are woefully lacking. Current statistical reporting programs are erratic; subsequent publication lags do not help. Currently available statistics are years behind the times. For example: The latest figures for colleges and universities published by the U.S. Office of Education cover fiscal 1967-68. Some selected statistics exist for certain liberal arts colleges and for members of the Association of Research Libraries for fiscal 1966-67. Purdue University has published an interesting projection to 1980 for research libraries. Public Library statistics for libraries in cities over 25,000 in population exist for fiscal 1967-68; with a 1968-69 survey underway.

There never has been a comprehensive collection of statistics for special libraries. A survey of special libraries serving state government gives figures for 1963-64; a similar study of these libraries serving federal government agencies exists for 1965-66. Some specialized groups have fared better; more recent studies have been conducted for health science and law libraries. No figures for corporate libraries are available; there are no plans to update or make more inclusive overall statistics for

4. Nourse, E. Shepley. "Areas of Inadequacy in Serving Multiple Needs," in Knight, Douglas M. and Nourse, E. Shepley, Libraries at Large, p.163-64. New York: Bowker, 1969.
5. Knight, Douglas M. and Nourse, E. Shepley. "The Costs...," in their Libraries at Large, p.170. New York: Bowker, 1969.

this important group. A new survey of school libraries is being planned in 1970; the only presently existing statistics are for fiscal 1962-63. This group is eliminated entirely from a current census of libraries in the United States.[6] Present library costs are not only greater than has been recognized, but cost per unit of output may have been increasing. Manpower costs, population growth, evolutionary inflation contribute to a rate of cost increase which is uncertain;[7] what is less uncertain is that the fiscal needs of libraries are moving faster than the present slow growth of the economy.

Library costs appear to vary in rough approximation to acquisitions costs. It is safe to predict that an increase in library budgets and salaries will have to move at the rate of 10% per year. Book prices, subscription costs, communications and equipment costs all are increasing; in some instances services essential to the average library are being priced out of the library market. No thorough evaluation of the costs to the user of secondary services exists, e.g., NASA, DOD and ERIC are examples. In the federal executive branch alone, information programs were budgeted at $380 million in 1966.[8] A single directory of services is now in the publishing phase; a multiplicity of distribution channels confuses the user. Restraints on use provide an added hazard. The regional technical report centers were discontinued in part due to alleged limited

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6. Schick, Frank L. "A Century of U. S. Library Statistics of National Scope," in The Bowker Annual of Library and Book Trade Information, 1970, p.7-8. New York: Bowker, 1970.
7. Knight, Douglas M. and Nourse, E. Shepley. "The Costs...," in their Libraries at Large, p.193. New York: Bowker, 1969.
8. "Toward National Information Networks: 1. The Government Makes Plans," by William T. Knox, Physics Today, 19:44 (January 1966).

use. What the user does not, or is not able to use cannot be effectively costed. Quality standards for existing services also are sorely needed.

There is little need to dwell on cost justification for library support in this paper. Justification was stated expertly and succinctly in one of the studies commissioned by the National Advisory Commission on Libraries, which concluded that national productivity and technology might well be adversely affected if library research did not contribute to it; furthermore, one necessary condition for assuring a rising per capita income is the existence of libraries. The Commission recognized that any increase in library costs would mean a negligible percentage of national income growth, and, if not allowed a foolish economy.[9]

Whether or not the cost justification of a national network is a salable commodity may be dependent upon the amount and success of the library homework that remains to be done. Somehow we will have to establish the record on present programs.[10] In discussing the New York State Library System (NYSILL), S. Gilbert Prentiss raises the question of value judgments versus absolute cost as well as relative cost of New York's network effort, suggesting that a one-to-one charge from lender to borrower might be the simpler, less costly method of handling interlibrary loan business.[11] We will have to produce the correct answers to the embarrassing questions of cost versus social objective, of maximum practicable access, of optimum

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9. Knight, Douglas M. and Nourse, E. Shepley. "The Costs...," in their Libraries at Large, p.206-07. New York: Bowker, 1969.
10. Mohrhardt, Foster. "A Challenge to Habit: Some Views on Library Systems," in Conference on Libraries and Automation, Airlie Foundation, 1963. Libraries and Automation, Proceedings, p.246. Washington,D.C.: Govt. Print. Off., 1964.
11. Prentiss, S. Gilbert. "The Evolution of the Library System (New York)," Library Quarterly 39:85 (January 1969).

service areas and units[12] and of network costs involving expensive technology.[13]

The National Commission reminds us that even to approach A.L.A. standards, we would need (as of 1968) $1.6 billion of funds for school libraries, $9.9 billion for academic libraries. It concludes that very large increases in federal support of libraries will be not only necessary, but actually inevitable.[14] The report criticizes weaknesses in the present support programs: a diffusion of legislation; overlapping, uncoordinated programs; no supporting program, nationally, for research libraries per se; very little support for library manpower and for planning at the state library level. Its recommendations, hopefully, would help to remedy these lacks.

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12. Purdy, G. Flint. "Interrelations Among Public, School and Academic Libraries," Library Quarterly 39:62 (January 1969).
13. National Academy of Sciences - National Academy of Engineering. Committee on Scientific and Technical Communication. Scientific and Technical Communication; A Pressing National Problem and Recommendations for Its Solution, p.170-72. Washington, D.C.: The Academy, 1969. This report has an excellent section on prices and price differentials of secondary services, on forms of support for aids to literature access, including federally operated or supported aids; and describes the obstacles to and the procedures for procuring publications from federal scientific and technical agencies.
14. [U.S.] National Advisory Commission on Libraries. "Library Services for the Nation's Needs: the Report of the...," in Knight, Douglas M. and Nourse, E. Shepley, Libraries at Large, p.503. New York: Bowker, 1969.

CURRENT NETWORKS AND THEIR SUPPORT: SOME EXAMPLES

Certain current programs which engage in one or more facets of networking can be described to illustrate the varia of funding sources. No attempt has been made to assure complete inclusiveness; however, the types of organizations alluded to, and their financing patterns, can be viewed as reasonable examples of what is occurring today. Reference will be made to the specific funding pattern employed in each. A most extensive study of interlibrary cooperative services which has been conducted by Dr. Edwin E. Olson of the School of Library and Information Services, University of Maryland, when published, should reveal much more about present financial patterns, their uses and abuses, weaknesses and strengths. From preliminary presentations of his findings at the A.L.A. Midwinter meeting in Chicago, and during the A.L.A. Conference in Detroit, there is, in judgment, no reason to expect a startling disagreement with this author's tentative conclusions as presented in this paper.

Funding of such groups as data banks, consortiums, information centers, bibliographical centers, or union catalogs; courier services, corporate networks, and the many illustrations of state or intrastate networks, is dependent to a considerable degree upon federal and/or state grants, the latter often merely transferral devices for passing on federal monies. Initial grants have come from thesesources; initial grants also have come from the private sector. Via chapter, contract, or very informal agreement, additional funds come from membership or use of services. These user fees are based on variations in formulas and yield unpredictable incomes. Many of these groups could not exist without some indirect subsidy; usually this

includes cost absorption of rent-free quarters, maintenance and other overhead by a host institution. Varying amounts of additional income are derived from other sources: gifts and supplemental foundation support; subcontracts for services performed; royalties or other revenue from publications; dividends or interest on savings and investments; use of accumulated surplus. In the case of certain simple cooperatives, e.g., local federations of public libraries, income for basic activities is provided from the several local tax sources affected, with special project monies frequently granted from state and federal transfer funds.

State/Federal Grants

This paper need not describe the many federally-funded authorizations for programs which can be carried on under the Library Services and Construction Act titles, the Higher Education Act, the Elementary and Secondary Education Act and other legislation. These are currently listed and described elsewhere.[15] The National Library of Medicine's support of biomedical networks is well known, as is the National Science Foundation's support of mission and discipline oriented information systems. The type of grant: establishment, demonstration, or a special project; the requirements for use: contractual, informal, or special purpose also is amply described.

Membership or Access Fees

Membership or access fees when assessed open the doors to users under limitations stipulated by the institution levying them. Some are entrance fees only; actual service is provided by payment of additional fees. Some

15. "Legislation and Grants," in The Bowker Annual of Library and Book Trade Information, 1970, p.77-147. New York: Bowker, 1970.

are self-inclusive and allow access to all services tendered. The basis of the fee may be population, enrollment in academic institutions, a percentage of operating or book budgets of affiliators; or volume of interlibrary loan.

User Fees

User fees are charged for services in a more particularized fashion. They may be arrived at by a simple divider: cost of the service ÷ use. Few of them have been determined as the result of any truly comprehensive cost analysis, and, in fact, this represents one of the real dilemnas of formula-making. User fees can be many things: a search fee, a current-awareness charge; a transaction fee for processing an interlibrary loan; or a charge for the performance of a service or combination of services.

Data Banks

Data bank charges have not been explored for this paper. Data banks are frequent by-products of one-to-one relationships of research and development organizations to federal government agencies funding them. These banks are available to defense contractors, to the general public on proof of need; or may be sold as a service by subcontractors, e.g., a NASA data bank that is tapped for specific searches or for current awareness on demand of the customers is available on contract from the Technology Application Center, University of New Mexico. This Center has a price structure, presumably bearing some relationship to the cost of searching the several data banks at its disposal, since its services offer access to a large number of additional data sources other than NASA.

Information Banks - Information Centers

The Library Reference Service, Federal Aid in Fish and Wildlife Restoration (U.S. Department of the Interior, Bureau of Sport Fisheries and Wildlife) is an indexing and reference service funded under two programs of

this agency, with quarters furnished by the Denver Public Library. Its services - bibliographic, photocopy, reference, and computer search - are free to state and federal personnel allied with the programs, or to serious researchers sponsored by them; so-called noncooperators pay specified service charges.[16]

Southern Methodist University's Industrial Information Service is one of the most successful, if not the most successful information center outlasting the demise of State Technical Services Act funding. These technical information centers originally matched 50% grants from federal funds via state-assigned disbursing agencies, with equal amounts contributed from sponsoring institutions and/or membership and service fees. IIS has established an access fee for various member categories, based on dollar volume use of its services in a previous twelve-month period. Its service fees establish charges for the loan of materials; for photocopy; bibliographic verification; ready reference; for literature searches or search guidance, for location of material outside of the Dallas-Fort Worth area; for referral to information/data sources; for delivery service. This schedule was designed after a cost study, and concurrently with renewal of agreement for assumption of overhead costs by Southern Methodist University. Presumably its viability will continue to reflect a realistic cost appraisal as well as an aggressive service promotion effort.[17]

16. "Service Fee Now in Effect," Newsletter [Library Reference Service, Federal Aid in Fish and Wildlife Restoration] no.11:1 (June 1970).
17. "New IIS Fee Schedules," IIS Industrial Information Service, Southern Methodist University Newsletter 4:2. (July 28, 1970).

A very similar set of charges is in effect at the Regional Information and Communication Exchange (RICE) at Rice University, Houston, and at the Colorado Technical Reference Center, housed at and otherwise supported by the University of Colorado.[18]

Consortiums

A recent study of academic consortiums presents some interesting facts on library participation in these groups. 5.4% of a total of 1017 reporting institutions indicated some library activity. Most of them (971) said that the consortium was supported financially, although only one-third of these reported a separate budget. Most of them receive no present federal or state funding, although responses on planned new consortiums show signs of an increased reliance on federal funding, using the Higher Education Act and other legislation presently available. Other funding comes from the private sector (gifts and grants) or from the participating institutions. Some consortium activities require little or no funding; however, clear fiscal and administrative agreements are not always present, as perhaps they should be, if only to justify the advantages of joint use and support of facilities otherwise unaffordable.[19]

Courier Services

Courier, or delivery services often are arrangements within arrangements, parts of larger cooperative efforts such as resource centers, processing centers, or information services. The service administered by the Colorado State University is linked with the Colorado Academic

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18. "A Comparison of Fees Charged by the Colorado Technical Reference Center and by Centers in Other States," CTRC Newsletter 2:3 (November-December 1969).
19. U.S. Office of Education. Consortiums in American Higher Education: 1965-66; Report of an Exploratory Study, by Raymond S. Moore... Washington, D.C.: Govt. Print. Off., 1968.

Libraries Processing Center, but available for other uses such as interlibrary loan and message transfer. The expense of this particular service, after experiment with an earlier, weighted formula, now is costed simply by dividing salary and mileage by the number of items delivered to each participant member.[20]

Center for Research Libraries

As is well known, membership in the Chicago-based Center for Research Libraries originally was confined to major academic institutions in the Midwest carrying on research programs, and with specific requirements for (1) library volume and (2) expenditures for books and materials. Now open to membership without geographic restriction, it offers also a second class of membership to associates based on the same formula but with lesser requirements. The Center also is able to support extensive materials acquisition programs by agreement of the participants, securing added funds from federal sources.[21]

METRO: An Example of an Intrastate Network

METRO (New York Metropolitan Reference and Research Library Agency), as a representative of the well-known 3-R's structure in New York state, received an establishment grant under that program in 1967, and since has received added funds. Prior to this, it received a one-year operating grant from the Council on Library Resources. The State's regional corporation requirements qualify and limit membership to academic institutions, but do extend to large public libraries. The state aid formula allows, in addition

20. [Hershcopf, Richard D. Colorado State University, Letter to Interlibrary Loan Courier Members, July 6, 1970].
21. "Circulation Policy," Newsletter [Center for Research Libraries] no. 109:6, (January 1969).

to the establishment grants, per capita annual grants based on student enrollment in institutions of higher education and on census-reported professional persons living in the area.

A dues structure was adopted in 1967. This sets forth several classes of library memberships, each paying in a dues scale according to amount of annual library budget; the maximum is one-tenth of one percent. State aid via basic formulas and special project grants amounted to $100,000 for fiscal 1968-69; foundation grants have added approximately half that much annually. The New York Public Library originally subsidized space, utilities, staff services, and some staff salary.[22,23]

Union Catalogs - Bibliographical Centers

The experiences of three of the union catalogs - bibliographical centers which have endured since the mid-1930's provide pertinent case histories and demonstrate endurance on limited means. Some examination of their various fiscal programs is in order. From original funding by the Carnegie Corporation, each has for many years relied upon membership goodwill or lack of it, upon largess from host institutions for quarters; and sometimes for staff and supporting services. Two of the regional centers within recent years have benefitted from statewide network development programs. Discussion of their fee structure is confined to the primary services rendered by these centers, that of bibliographic assistance, location and interlibrary loan and referral. Each institution has had added income from projects or other sources, usually marginal in amount.

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22. Cory, John Mackenzie. "The Network in a Major Metropolitan Center (METRO, New York)," Library Quarterly 39:90-98 (January 1969).
23. New York Metropolitan Reference and Research Library Agency. METRO: What It Is and What It Does. [New York, 1968?]

Union Library Catalogue of Pennsylvania

This catalog - bibliographical center originally limited its services to the Philadelphia metropolitan area, in which are located many academic libraries and small special libraries. Subscription (membership) fees for academic libraries and related nonprofit institutions are low, based on library income, and at a maximum are one-fifth of one percent of total income, with certain exceptions for libraries making small use of the catalog. Subscription fees for industry range from $50 - $500 per year. The Catalogue charges nominal per inquiry fees, in addition.[24,25,26]

For the past seven years, the Catalogue has been a part of the Pennsylvania statewide reference service program, receiving an amount of money for services rendered to the entire state. In 1968, a statewide arrangement was inaugurated with the New Jersey State Library.

Pacific Northwest Bibliographic Center

Mrs. Lura Currier's just-completed study of this Center, undertaken subsequent to the Becker-Hayes working paper on the proposed Washington state network, explicitly details the problems of a voluntary organization to which no public funds are directly appropriated. Low dues, a fluctuating membership, income which lags behind need, an inability to plan because of fund uncertainties caused by an undisciplined membership; and a lack of firm policy, directed by short-term officers with varying interest in, or

24. Longenecker, Henry C. "Financial Support of the Union Library Catalogue," [Union Library Catalogue of Pennsylvania] Newsletter no. 85:8-11, (February 1962).
25. Union Library Catalogue of Pennsylvania. Contract for Service. [Philadelphia: The Catalogue, n.d.]
26. Ibid. Schedule of Subscriptions for Academic and Related Nonprofit Institutions Voluntary Support of the Catalogue. [Philadelphia: The Catalogue] 1966.

commitment to, the organization: all these are disadvantages if one seeks a successful network operation.

The formula implementing this state of affairs has been in effect since 1951, and calls for a maximum membership payment of $1,000 based on (1) one-fourth of one percent of annual library expenditures for academic institutions or others without buildings and grounds costs, provided income is in excess of $25,000; or (2) for public libraries, a fee of one-fourth of one percent of an amount equal to 80% of income. Small libraries pay very small amounts; very small libraries are not required, but are encouraged, to make token payments. Mrs. Currier's recommendation for adequate support proposes a shift of PNBC support to the states on a pro rata population base, each state contributing in ratio to total population of all the states served. Her recommendations are under current discussion. She proposes a budget which would be presumed to be based on income from application of the pro rata fee.[27]

Bibliographical Center for Research, Rocky Mountain Region, Inc.

This regional center provides a record of the most extensive experimentation with membership and use fees. For many years, it accumulated funds from voluntary contributions. In 1951, it set a pattern of low basic membership fees based on academic enrollment; and, for public libraries, population. There was a geographic price differential as between Colorado and the remaining states in the region. To supplement this base, a percentage service charge was to be made once the Center's budget was adopted. The difference between the total amount of money collected from basic membership fees, and the amount of money needed (budgeted) was to be

27. Currier, Lura Gibbons. Sharing the Resources in the Pacific Northwest; A Study of PNBC and Interlibrary Loan. Olympia: Washington State Library, 1969.

prorated among the members according to each members' percentage of total requests processed in the Center in the year preceding. There was no basic fee established for other types of libraries.[28]

A new fee schedule was effected in 1962. This arbitrarily set minimum membership fees for all types of libraries, including state library agencies. The fees were nominal; added to them was a unit, per item charge, based on a moving average of use over an immediately prior two years (a parity feature). During this period, the Center, aware of the precedent set with the Pennsylvania State Library by the Philadelphia Union Catalogue, began thinking about the possibility of contractual arrangements with state libraries in its area. It successfully concluded such arrangements in three states in the period 1965-68.[29]

A revised schedule, adopted to go into effect in 1969,[30] put this policy into the fee structure. It called for two plans of membership: a statewide support plan, negotiated in accordance with services rendered to a group of libraries designated by a state library agency and funded by the state, usually from LSCA Title I monies; some Title III money was used; and, in the case of one state, state grants-in-aid were available. Direct support plan memberships were charged at one-fourth of one percent of current annual operating budget. Nonmember use fees also were stipulated. Intended as a transitional schedule, with provision for compromise and negotiation, this schedule brought a demand for a cost study of the Center.

28. Bibliographical Center for Research, Rocky Mountain Region, Inc. The Basis for the Support of the Bibliographical Center. [Denver: The Center, 1951.]
29. Ibid. Membership Fee Schedule. [Denver: The Center, 1961, 1963.]
30. Ibid. Revised Fee Schedule. (Adopted by the Board of Trustees June 27, 1968). [Denver: The Center], 1968.

The study was made[31] and a resultant fee schedule was placed in effect in 1970.[32] This schedule continues to incorporate the state plan approach, and, in fact, is designed deliberately to encourage this pattern. It sets mandatory fees for state agencies, based on population figures. For those libraries remaining outside a statewide program, i.e., either the states in which they are located are not willing, for a variety of reasons, to negotiate, arrange, and pay for the program; or the libraries are in a peripheral geographic location with the potential of state linkage deemed unrealistic, there remained the alternative of individual payments of access fees. Based on the rationale of the preference for the state plan, individual libraries can pay access fees on the basis of total interlibrary loan borrowings, plus a transaction fee, into which was built a quality factor. Libraries, or state agencies are requested to define the kind of service desired in terms of location of materials, bibliographic verification and priority service. Nonmember charges are set to exceed any combination of these factors. The schedule has resulted in new and renewed state contracts; with some accommodations to within-state facts of life which retain an element of local responsibility for transaction fee payments.

The Present Programs: Advantages and Disadvantages

Some of these programs represent substantial steps in or contributions toward networking. That some of them are precariously financed is obvious.

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31. Maier, Joan M. The Bibliographical Center for Research, Rocky Mountain Region: A Cost Study of the Center's Present Operations. Prepared by..., Project Leader and Consultant and a Project Team from the Institute on Library System Design and Analysis, Graduate School of Librarianship, University of Denver. Denver: Bibliographical Center... 1969.
32. Bibliographical Center for Research, Rocky Mountain Region, Inc. 1970 Fee Schedule. [Denver: The Center], 1969.

Projects inherently necessary to ongoing functions, and essential for important new undertakings, remain static of dormant due to want of funds. Clearly, support policies and support levels not only demonstrate fiscal weaknesses and misdirections, but more importantly, are creatures of lack of administrative and political planning. Thus it is the want of design - and perhaps the want of commitment - which may be responsible for fiscal impoverishment. The present programs include some viable features and, where based on long term, large-scale development programs or the elements thereof, they appear to have these common denominators: a grant program, with extensive filtering down of federal funds; a measure of local and user responsibility for payment; certain other evidences of subsidy (within-house support; absorption of overhead, etc.). Present programs clearly suggest that there must be a sound financial structure for networks.

PROPOSED PROGRAMS FOR NETWORK DEVELOPMENT

There are several significant proposals for network development. With the pursuit of the charges given to the newly established National Commission on Libraries and Information Science,[33] this new body may provide some cohesiveness to network planning.

There already has been planning and pro and con argument for some time around the activities of the Committee on Scientific and Technical Information (COSATI).[34] The National Academy of Sciences - National

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33. "National Commission on Libraries and Information Science," LC Information Bulletin 29:374-77 (July 30, 1970).
34. "Toward National Information Networks: 1. The Government Makes Plans," by William T. Knox, Physics Today, 19:39-44 (January 1966).

Engineering Committee on Scientific and Technical Communication (SATCOM) has a Joint Commission on Scientific Communication working with COSATI in initiating and carrying out analyses and exploration of network components under a properly funded program.

In reaction to the original COSATI proposals, the Ad Hoc Joint Committee on National Library/Information Systems (CONLIS) proposed an integrated national information system with local, self-supporting outlets. It anticipated building on existing structure after thorough investigation of its inadequacies. CONLIS expected support and use of private as well as public agencies. The national agency envisaged would be expected to contract with others, or to itself operate the essential national bibliographic services, and to negotiate with other agencies for supplemental services at the local level, once the measures of need were established.[35]

The SATCOM report shows particular concern for the need to study and value factors, cost-effectiveness ratios, input costs of information, the pricing of services to the user, especially of the basic access services of document availability; bibliographic control, abstracting and indexing. It is also preoccupied with the form of continued federal support, overlaps and gaps in coverage. It suggests topics for study: an evaluation of potential support for academic and research libraries; equation of library revenues with costs of required services, possibly on a cost-reimbursable basis; how to obtain effective local access to current technical literature; improvement in the flexibility of access to information systems. It wants

35. Ad Hoc Joint Committee on National Library/Information Systems (CONLIS). Improving Access to Information; A Recommendation for a National Library/Information Program. Chicago: American Library Association, 1967.

cost studies on different methods of storage and transmission of information, on optimums of information centers, the location of these centers in relation to the question of centralization vs. decentralization.[36]

Downs in proposing a regional library authority for the Kansas City Regional Council of Higher Education advocated LSCA support in recognition of the services supplied by such an authority. The enumerated services were to be directed toward bibliographic access, acquisition, cooperative storage, processing, and advisory service to the college libraries participating. His study proposed National Science Foundation support to the Linda Hall Library as an adjunct resource; the solicitation of area business and industry support; application to Foundations for special projects, and annual assessments from some equitable formula.[37]

Among the organizational considerations discussed in EDUNET: Report of the Summer Study on Information Networks, conducted by EDUCOM in Boulder, Colorado, in 1967, were various financial proposals. Fiscal problems of the proposed network were explored in terms of fund sources and allocations; external vs. participant support; cost distribution as related to local responsibility and local use. Brainstorming produced detailed suggestions for pricing mechanisms, internal accounting, billing of users, costs of data bank acquisition, royalty and copyright payments. Recognized were the burdens placed upon participant institutions, and the need to resolve inequities via payment schedules, contractual arrangements, and other reimbursement features. User fees were generally proposed, although it was

36. National Academy of Sciences - National Academy of Engineering. Committee on Scientific and Technical Communication. Scientific and Technical Communication... Washington, D.C.: The Academy, 1969.
37. Downs, Robert B. A Survey of Cooperating Libraries for the Kansas City Regional Council of Higher Education. Kansas City, Mo.: Kansas City Regional Council, 1964.

suggested that ability to pay might not be the sole criteria of access. To finance this extensive educational network, federal funds are to be sought for a demonstration period, possibly from a combination of agencies. The developmental plan would employ such subsidies, to which would be added membership dues, and private subsidy; plus indirect and direct subsidy from participating institutions. These monies would be intended as the backing for the planning activities of EDUCOM, the next stages of operational testing and development, and the ultimate full operational status.

Alternatives in communications layouts were outlined. Cost estimates for network development and for the communications proposals were stated.[38]

In a working paper for a statewide library network, Becker and Hayes projected costs of such a network for the state of Washington, but supplied no budget or fiscal formula; nevertheless the considerations incidental to the next steps in the planning of this network are important and resulted in the Currier study mentioned previously. Further studies are in process.[39]

As a basic document for a conference on an agricultural sciences information network held this year, EDUCOM's plan for this network provides some cost elements, particularly for telecommunications.[40]

A modest project on a regional level is that currently seeking letters of intent from a group of academic libraries. It suggests a credit arrangement with billings for filled and unfilled interlibrary loan requests

38. EDUNET; Report of the Summer Study on Information Networks Conducted by the Interuniversity Communications Council (EDUCOM), New York: Wiley, 1967.
39. Becker, Joseph and Hayes, Robert M. A Proposed Library Network for Washington State; Working Paper for the Washington State Library. Olympia: Washington State Library, 1967.
40. EDUCOM. Agricultural Sciences Information Network Development Plan. (RR169) Boston: EDUCOM, 1969.

administered by a clearinghouse to be designated by the signators. The costs would be absorbed by the libraries participating, billed to patrons, or financed by a special grant proposal.[41]

Intended for application in the biomedical community, a Rand Corporation paper looks at some of the inherent economic considerations in directing the choice of communications systems, and advises against a single technology. The costs are illustrative.[42]

Another discussion of technology and the decisions required of research libraries in such matters as machine-readable catalogs, the impact on library building requirements of advanced communications devices for data and information transmission such as facsimile, the picturescope, or optical scanners, is to be found in the published volume on the work of the National Advisory Commission on Libraries. In further consideration of technological impact in this work, Cuadra recommends a program of action contemplating five projects, leading to a fully integrated national library system, and indicates that cost appraisals would be required. It is assumed that massive support would be an absolute; identification of all potential sources of support a necessity, but that most of the funding would come from the federal sector.[43] If such is the judgment, it is highly likely that federal funding will impose controls in order to obtain the desired cooperative action.[44]

41. Regional Information Network Group [Denver]. Academic Library Teletype Experiment; Letter of Intent. [Denver: The Group] 1970.
42. Farquhar, J. A. and Dei Rossi, J. A. Alternative Technologies for Information Networks. (P-4722) [Santa Monica, Calif.: Rand Corporation] 1969.
43. Knight, Douglas M. and Nourse, E. Shepley. "Some Problems and Potentials of Technology as Applied to Library and Information Services," in their Libraries at Large, p.279-288. New York: Bowker, 1969.
44. Nolting, Orin F. Mobilizing Total Library Resources for Effective Service. Chicago: American Library Association, 1969.

Other thinking about what states can do to finance network activity is to be found in Connor's recommendation that each state should seek funds to set up its own version of the LSCA Title III program, supplementing that source of funding.[45] In Swank's California study, he recognizes cost elements and proposes federal and state grants, along traditional lines, to meet the need of reimbursement to resource libraries.[46] Cost data are wanting.[47]

FUTURE SUPPORT OF NETWORKS

There is near-unanimous expectation that Washington - the federal government - must be the source of major library funding,at least initially. So pervasive is the belief in this as a justified expenditure that it is reflected in the consistent conclusions in the literature whenever support of networks is discussed. While the National Advisory Commission on Libraries echoes this, it did not consider it within its province to offer a dollars and cents formula.[48] The National Academy of Sciences study considered a number of possibilities: (1) a system so centralized, federally-operated, that it resembled the Soviet pattern; (2) initial or developmental subsidies, of limited duration; (3) input cost charges to authors, output costs to be

45. Connor, Jean L. "Stages in and Fields for Interlibrary Cooperation," Bookmark 13-18 (October 1967).
46. Swank, R. C. Interlibrary Cooperation under Title III of the Library Services and Construction Act; A Preliminary Study for the California State Library. [Sacramento: California State Library] 1967.
47. Ross, Virginia L. "Review of Interlibrary Cooperation under Title III of the Library Services and Construction Act, by Raynard C. Swank. News Notes of California Libraries Suppl. 65:367-75 (Winter, 1970).
48. Nourse, E. Shepley. "Areas of Inadequacy...," in Knight, Douglas M. and Nourse, E. Shepley, Libraries at Large, p.163-164. New York: Bowker, 1969.

borne by users; (4) direct subsidies for input costs only, output costs to be met by marketing the service.[49]

Cost Elements

Any formula for network support requires consideration of cost elements and these are embedded in the structural and operational decisions of network construction. The questions of what kind of network, the projected stages of development, and who pays for what, must be answered before a viable formula can be advanced. Otherwise, we would be prescribing a fiscal remedy without benefit of diagnosis. Communication costs must be specified in terms of equipment, routing, channels, volume, and outlets.[50] Alternatives may lead to alternative formulas. Indirect costs may vary as between simple and complex networks. Contractual relationships may provide reimbursements from one political level to another which requires subsidy, such as federal or state support to the research library providing for the use of its collection. Use of expensive data banks or information analyses centers may require cost reimbursement or service fees from the network. The formula will have to have a built-in schematic not only for raising money but for paying it out.

Cost design as related to formula will demand prediction of use, and must provide flexible alternatives and adaptations based upon a series of variables. Use of program budgeting by libraries is just beginning. Cost justification should be founded on this kind of planning and budgeting.

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49. National Academy of Sciences - National Academy of Engineering. Committee on Scientific and Technical Communication. Scientific and Technical Communication... Washington, D.C.: The Academy, 1969.
50. Emling, J. W., Harris, J. R.; and McMains, H.J. "Library Communications," in Conference on Libraries and Automation, Airlie Foundation, 1963, Libraries and Automation, Proceedings, p.203-219. Washington, D.C.: Govt. Print. Off., 1964.

Functional costing; along with the imperative of cost-effective programming, must be accompanied by standards.

While there is this acceptance of reliance upon federal funds, the question of the fair share of federal vs. state vs. local support is interjected in several current writings. Knight and Nourse suggest more research is in order, to arrive at a fair share formula to replace present speculative or assumptive acceptances. These authors note that Joeckel suggested a formula of this kind in reporting to the President's Advisory Commission on Education in 1938; Joeckel and Amy Winslow later spelled this out in percentages: 60% local; 25% state, 15% federal funds. At an Allerton Park Institute in 1961, Hannis Smith is reported to have supported these shares as 40% local, 40% state, 20% federal.[51] Actual support of public libraries, as we have noted previously in this paper, does not approach this optimum, if such it is. If this is a generally accepted ratio, its application has been directed to public libraries only; the issue has not been faced for school, academic, or state libraries. Frantz makes the point that "...we need to nail down the generally emerging but still vague concept of the continuing federal share..."[52] He looks at the dogma of matching funds with some question, since it appears that matching may be more in myth than in reality.

In looking at program goals for public libraries for this decade, Drennan's projection of possible funding trends considers three levels of

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51. Knight, Douglas M. and Nourse, E. Shepley. "The Role of Local-State-Regional Cooperation," in their Libraries at Large, p.408. New York: Bowker, 1969.
52. Frantz, Jack C. "Big City Libraries: Strategy and Tactics for Change," Library Journal 93:1968 (May 15, 1968).

funding into which he has built sharing formulas. Noting that in 1965 local governments received 30% of their revenues (for all purposes) from non-local sources, supplying 70% themselves, he compares this ratio and the more usually advocated 60-25-15 to speculate on what could happen to library funds under three conditions: a prevailing status quo economy; a projective trend based on the experience of the 1960's; and the optimum of meeting present A.L.A. Standards.[53]

Whether formula construction for network application can pursue as simple an approach even if the ratios were a matter of firm acceptance is highly questionable. Very possibly networks may require an inverse ratio, e.g., 20% local, 20% state or regional, 60% federal. What is not at all to be questioned is that network planners are forced to look at the politico-economic debate on revenue-sharing which preoccupied economists, fiscal experts, and politicians, and which is implicit in all tax reform measures before Congress. A most valuable compedium[54] of historical review, current concerns and authoritative position papers should not be overlooked by library-information specialists; nor should the tax reform measures which have so far come out of congress, or remain in debate. The bibliography appended to this paper calls attention to the contributions in the three volumes of the compedium of especial pertinence to a consideration of a network formula. This paper attempts to synthesize the relevancies, rather

53. Drennan, Henry T. "Public Library Program Goals in the Decade of the 1970's," in The Bowker Annual of Library and Book Trade Information, 1969, p.14-18. New York: Bowker, 1969.
54. U. S. Congress. Joint Economic Committee. Subcommittee on Fiscal Policy. Revenue Sharing and Its Alternatives: What Future for Fiscal Federalism? (90th Cong., 1st sess. Joint Committee Print) Washington, D.C.: Govt. Print. Off., 1967. 3v.

than to extend itself to a lengthy and specific consideration of the contents. Therefore, concentration of interest for our purposes in this conference is indicated; and some conclusions drawn:

1. The arguments over conditional/categorical vs. block/unconditional grants represent positions which require political resolution. While some movement may be made toward block and unconditional grants (such as favored by the Commission on Intergovernmental Relations and given to librarians by Colman)[55] the traditional use of categorical or functional grants (not without some amalgamation of these) will continue. These are grants to which librarians are accustomed.
2. Equalization formulas such as built into the Hill-Burton Act and other health measures (and which have been applied in part to LSCA) will continue to be employed, and in fact, expanded, since this factor is missing from many present revenue-sharing measures. It may be applied even if unconditional grants are accepted in the United States. (Another area of equalization might be compensatory payments to specialized data bases, mission-oriented networks, copyright owners.)
3. Even conservative fiscal experts predict more federal sharing. This may be accompanied by such features as open-ended grants, with built-in controls, perhaps a lessening of distinction as between capital vs. operating grants. There will, however, be
4. Emphasis on what is termed efficiency. This warrants sub-definition. It implies a cost-benefit analysis requirement, an

55. Colman, William G. "Federal and State Financial Interest in the Performance and promise of Library Networks," Library Quarterly 39:99-108. (January 1969).

evaluation of social investment, a systems approach to formula building, and an evaluation of what is called spillover. This term is directed to a special consideration of cost-benefit. It suggests the determination of internal vs. external benefits of any program. In library consonance, this would appear to have application to the economy of larger units of service, to support from the taxpayers living within the core unit, e.g., a metropolitan area serving persons outside of the boundaries of the corporation. A cost spillover might not warrant grant support; a benefit spillover might. The cautionary advice; plan accordingly. By extension, this should engage the attention of the network planner, and should include a further requirement: a correct analysis of demand.

5. The cost-benefit, systems approach is linked in several challenging proposals to suggestions that a regional approach to federal grants may be increasingly used. It is used now in the funding of the Appalachia programs, in the Public Works and Economic Development Act of 1965, in which the Secretary of Commerce is directed to encourage multistate regional planning commissions; the several educational planning commissions in New England, the South and West are other examples of regionally coordinated planning. The political arrangements could vary, as could the contractual. Interstate compacts are one approach. The funding from federal sources might emerge as more generalized, permissive, and generous, provided this compehensive approach.

Finally, there is recognition of the need to collect much more data on expenditure, on the geographic distribution of expenditure, with computerized models to identify the direction for the best use of funds. These appear to be ideal considerations for network construction at a time when the federal/state/local/private sector participations may be readjusted under presently insufficient guidelines and the need for new formula development.

With all of this as, indeed, cautionary, there remains, to the contributor of this paper, only the most generalized conclusions for building a formula suitable to network planning. Since no expertise as fiscal expert or mathematician can be claimed, it would be presumptuous to suggest otherwise. What is suggested in this context, then is (1) an exhaustive examination of present funding formula and their applications; (2) the formulas suggested in such exercises as EDUNET should be correlated to these; (3) any result should be based on a consistency of financial support, politically acceptable to A.L.A., to other library groups, and to the presently fragmented fundgivers in both the private and public sectors.

Such a formula should take into consideration the elements of demand, cost-benefit and other planning approaches for long and short term application to network application, including projection of fixed and variable costs, the cost of interlinkage among networks (a near-impossibility at present) and the costs of inputting the great multiplicity of present and proposed information sources and data banks. Priorities must be stated. Models should be constructed and tested; prototypes should emerge. "Everyman" presumably waits for information; a truly national network will discover the marketplace and plan accordingly.

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